

hydrogen sulfide therein is washed for removal. In this case, a substance absorbing hydrogen sulfide, such as zinc oxide, may be placed into the bottom layer of catalyst layer, to thereby remove hydrogen sulfide. Subsequently, a mixture gas 7 which is formed by adding steam 2, oxygen 3, and optional carbon dioxide to the desulfurized natural gas 6 from which hydrogen is not typically separated is introduced into an autothermal reforming reactor 11. The natural gas is autothermally reformed, e.g. partially oxidized and reformed, to thereby obtain an impure synthesis gas 8. The synthesis gas 8 is processed at a carbon dioxide-separator 16 and at an excessive-hydrogen-separator 17, to thereby obtain a synthesis gas having a desired ratio of hydrogen/carbon monoxide 9. The carbon dioxide 4 separated at the carbon dioxide-separator 16 may be again introduced into the autothermal reforming reactor 11. The hydrogen 5 separated at the excessive-hydrogen-separator 17 may be used, to thereby desulfurize the natural gas serving as a feedstock. Further, the carbon dioxide-separator 16 and the hydrogen-separator 17 may be omitted by adjusting amounts of oxygen, steam, and carbon dioxide.--

IN THE CLAIMS

Please cancel Claims 1, 9, 25, and 28.

Please amend the claims as follows.

--2. (Amended) A catalyst, comprising an inorganic oxide carrier wherein the inorganic oxide carrier comprises from 0.05 to 20 wt.% zirconium as reduced to ZrO_2 and ruthenium.

3. (Twice Amended) The catalyst according to claim 2, comprising from 0.05 to 20 wt.% ruthenium.